Remarks/Arguments:

Applicants respectfully submit that the new Claims 31 – 42 define the invention in terms which are patentably distinguishable over the documents of record herein, including particularly the two patents of **Shelnut** (6,899,829) and **Boyko** (6,212,769) cited by the Examiner in the latest Action (Boyko being *optionally* cited).

New independent Claim 31 defines a method of making a circuitized substrate in which a *polytetrafluoroethylene* dielectric layer is immersed in a solution which combines both a conductive monomer and a seed material for a predetermined time period, following which the polytetrafluoroethylene dielectric layer is removed, rinsed, dried, and then plated with a plurality of *copper* circuit lines using, significantly, electroless plating. Equally significant, the electrolessly plated *copper* circuit lines on the polytetrafluoroethylene dielectric are sufficiently bonded to the polytetrafluoroethylene dielectric so as to possess a peel strength within the range of from about 2.3 to about 3.5 pounds per square inch. Support for the limitations are found in the previous independent Claims, now cancelled, and in the Specification on page 5, third paragraph.

Dependent Claims 32 – 39 include similar limitations as found in the previous dependent Claims, now cancelled.

New independent Claim 40 defines a method of making a circuitized substrate with similar limitations as new independent Claim 31, with the additional limitations that the polytetrafluoroethylene dielectric layer is immersed in a solution which combines a pyrrole conductive monomer and a palladium-tin seed material, and that the electrolessly plated *copper* circuit lines on the polytetrafluoroethylene dielectric are only about 0.001 inch thick. Support for these added limitations are found in the Specification on page 5, first paragraph and on page 6, last paragraph.

Dependent Claims 41 and 42 include similar limitations as previous dependent Claims, now cancelled.

Support being fully provided for all of the limitations in the remaining Claims, the amending does not constitute the addition of new matter. Entry is again urged.

Key features of both of the independent Claims now presented include the unique process wherein Applicants are able to successfully electrolessly plate copper circuit lines onto a polytetrafluoroethylene dielectric such that said plated copper lines will sufficiently adhere (bond) to the dielectric and not be readily separated there-from. Accordingly, Applicants now define the electrolessly plated lines as having a peel strength with a specified range that assures this bonding.

As clearly stated in Applicants' specification (page 2, third paragraph), Teflon (polytetrafluoroethylene) is relatively difficult to plate "due to non-optimum adhesion between metals and the dielectric." This is particularly true, as stated further, if attempting to use an immersion-type electroless plating operation. Applicants have invented a new and unique method which solves this heretofore difficult problem by successfully plating copper onto polytetrafluoroethylene that will adhere at proper peel strength values. And, Applicants have done so using a highly desirable electroless plating process wherein the substrate is immersed and wherein extremely fine circuit line resolutions (only about 0.001 inch thick, per claim 40) are attainable, said fine lines highly desired for many of today's complex substrate products.

In their dependent Claims, Applicants have even further defined using specific temperatures for the combined solution when the substrate is immersed therein, specific percentage ranges for various components of the compositions taught, the use of additive components such as oxidants, the formation of such fine line copper circuit lines on polytetrafluoroethylene without using sputtering, and the steps of forming additional similar substrates and bonding these together to form larger, multilayered structures.

In brief summary, Applicants have taught and now claim a method of making a circuitized substrate which is a significant advancement in the art.

None of the documents of record herein, including particularly **Shelnut** and **Boyko** as applied in the final Office Action, are suggestive of the claimed invention.

Shelnut, the primary document cited in the Action, does not suggest using a solution of a conductive monomer and seed material, nor does this patent describe using electroless plating on a substrate once treated. **Shelnut** also fails to specifically teach or suggest treating polytetrafluoroethylene in this unique combination of steps. **Shelnut**, as stated by the Examiner, instead speaks of using a polymer with possibly a seed material, and using electroplating, but fails to suggest substituting a monomer for his polymer or of substituting electroless plating for the significantly different process of electroplating. Applicants must respectfully argue that with respect to plating a highly sensitive material as polytetrafluoroethylene, electroless plating is not an "obvious alternative expedient." Nor has the Examiner provided any authority for such a conclusion, particularly in this complex environment. Absent such authority, the conclusion is erroneous and cannot support a proper rejection under 35 USC 103. Still further, **Shelnut** fails to suggest attaining fine line copper circuitry with peel strength values as expressly taught (and claimed) by Applicants. Lacking so much suggestion, **Shelnut** is so deficient as a prior art reference that there is no motivation for one skilled in the art to make the extreme number of significant changes considered by the Examiner to be obvious. See, e.g., ***In re Dillon***, 919 F. 2d 688, 692 and 693 (Fed. Cir. 1990) (en banc.). Stated alternatively, the substantial evidence standard is not met by the almost complete lack of teachings or suggestions by the **Shelnut** document. The rejection under 35 USC 103 based solely on **Shelnut** is in error and withdrawal thereof most respectfully urged.

Boyko, *optionally* applied in combination with **Shelnut**, also fails in many respects to suggest the instantly claimed invention and is equally as deficient as **Shelnut**. Most importantly, **Boyko** inherently lacks the requisite suggestion to extensively modify **Shelnut** as the Examiner proposes. **Boyko** requires the initial bonding of a copper layer to the substrate and then its

(copper layer) removal, allegedly to form a "roughened" substrate surface, which then is apparently capable of being treated with various solutions. Applicants' claimed method does not require such a procedure. The only modification possible of **Shelnut**, based on this limited teaching of **Boyko,** is to remove **Shelnut's** polymer layer, which would render Shelnut's structure inoperable for its intended purpose. Most importantly, the result would not be Applicants' claimed invention. **Boyko** further appears to require two separate solution treatment steps and not one in which a combined solution is used. In column 7, **Boyko** describes a "chemical pretreatment" prior to electroless copper deposition, the first step of this "pretreatment" being a "conditioning step" (line 36) which "facilitates the absorption of the later applied catalyst/activator seed treatment" (lines 37, 38 – emphasis added). In addition to requiring two steps here, this patent also fails to mention using a conductive monomer as said "conditioner", instead mentioning using a "cationic polyacrylamide" (line 40 - emphasis added). **Boyko** also fails to suggest other features of the claimed invention, including particularly providing fine circuit lines with peel strength values claimed by Applicants. Or of such lines having such extremely small thicknesses (0.001 inch). In summary, there is no adequate suggestion or motivation in **Boyko** to extensively modify **Shelnut** as proposed and thus properly support a combination rejection under 35 USC 103. Accordingly, the rejection fails. ***Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.***, 75 F.3d 1568, 1573 (Fed. Cir. 1996). Withdrawal thereof is again urged.

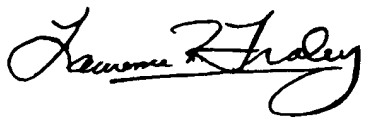
In summation, the law is well settled that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some proper teaching or suggestion to do so. A***CS Hosp. Sys., Inc. v. Montefiore Hosp.***, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). Thus, when relying on modification of a prior art document, it is incumbent upon the Examiner to provide some teaching or suggestion to make the modification. See also ***In re Jones***, 958 F.2d 347, 351, 21 U.S.P.Q.2D (BNA) 1941, 1943 (Fed. Cir. 1992). ***Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.,*** 776 F.2d 281, 292, 227 U.S.P.Q. (BNA) 657, 664 (Fed. Cir. 1985). As argued above, there is no such teaching or suggestion to one of ordinary skill in the art to proceed with the extensive modifications to **Shelnut**, as suggested by the Examiner. Even if there were, Applicants' have clearly established that the presently claimed

invention would not result. ***In re Jones, Ashland Oil*** and ***ACS Hosp. Sys.*** also mandate that when the Examiner is relying on a proposed combining of references, e.g., there must be some teaching or suggestion provided by the art for the combination. Neither of the documents as applied by the Examiner in the Action suggest combining the two documents to the extent that the invention as claimed will be the result. Contrarily, the limited teachings of each *teach away* from such combining. Here again, however, even if it were possible to so combine, the instantly claimed invention would not be the result thereof. With particular regard to the Examiner's own conclusions, such as "that electroplating and electroless plating are obvious alternative expedients", "it would have been within the purview of one skilled in the art to determine the necessary proportions of monomer and solution" and "it would have been within the ordinary skill of the skilled artisan to determine the necessary temperature of the solution needed to adequately create an adhesion promoting layer", Applicants respectfully argue that the Examiner has provided no support for such conclusions. Said conclusions should therefore be stricken.

Accordingly, the rejection applied in the final Office Action is deemed in error, has been fully overcome, and should be withdrawn. Allowance of the Claims (31 - 42) remaining herein is most respectfully requested.

The Application is deemed in condition for allowance, and such action on the part of the Examiner is respectfully urged. Should the Examiner believe, however, that minor differences may remain which, if overcome, will result in allowance of this Application and that said differences may be openly discussed in a telephone conversation, the Examiner is respectfully requested to phone the undersigned to discuss such differences and hopefully resolve same, thereby expediting prosecution of this Application.

Respectfully submitted,



Dated: November 16, 2005
Telephone: 561-575-3608
Fax: 561-745-2741

By: Lawrence R. Fraley
Attorney for Applicants
Reg. No. 26,885